

REMARKS

Claims 1-7 are pending in the application. Claims 1-7 stand rejected.

Claim Rejections under 35 USC §103

Claims 1-3 and 7 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Kanamaru et al. (US 6,496,023) in view of Howland (US Publication No. 2003/0227292).

The present invention is a probe sheet that includes a base plate (100) mounted to a prober of the instrument and a probe sheet (200) mounted to a lower surface of the base plate (100). The probe sheet (200) includes a flexible sheet member (210) and a number of probes (220) provided on one surface of the sheet member (210). The probe (220) has a shape capable of elastic deformation in a direction, upward or downward. As indicated in Figures 4(a) through 4(f) the probe (220) may take a number of shapes. Further, as indicated in Figures 5(a) and 5(b) the probe (220) may be reinforced by a reinforcing member (230) made of alumina with an elasticity higher than the probe (220).

Kanamaru et al. describes a number of probes (6) located on a sheet material (29). As stated in column 12, lines 51-59 of Kanamaru et al.,

“FIG. 16A shows a state before pressing, while FIG. 16B shows a state after pressing. The probes 6 are formed on a sheet material 29 which is easily deformable and in which wiring is formed in its interior. If a pressing jig 28 is pressed by a pressing mechanism 27 in the direction of arrows 31, the pressing jig 28 deforms the sheet material 29 as shown in FIG. 16B, with the result that the probes 6 come into contact with the electrode pads (not shown) in an obliquely maintained state...” (Emphasis Added)

Howland describes a multi-probe assembly which has conductive probes (36) with tips (38) that are elastically deformable. (See paragraph 38 of Howland).

As the Examiner asserts, Howland does disclose elastically deformable probes while another cited reference, Kanamaru et al., discloses a number of probes disposed on a sheet member. However, in the disclosures of these two cited references, or any other prior art, there is no recitation on the necessity for combining the above-said two features, i.e., on any technical challenges which can be resolved only by combining the two features. In circumstances where no necessity or technical challenges are recognized, even those skilled in the art would not have been able to combine the two technical achievements without any suggestions, teachings or motivations.

The Examiner alleges that it would have been obvious to combine the two kinds of technologies (i.e., the cited references Howland and Kanamaru et al.), while she fails to present specific recitations from the prior art with regard to the combination or indicate that the combination is a technical common sense in the art. Applicants believe that such allegation arose with hindsight, after review of the disclosure of the present application, and that it is not easy at all to combine the two technical features where there is no need.

Claim 1 has been amended by adding the feature that “wherein a proximity to the sheet member is variable in order to absorb and accommodate a plurality of dispersion in heights of electrodes of a measurement objective so as to accommodate inclination and warp of the measurement objective as a whole”. The prior art of record fails to disclose this feature. Therefore,

claim 1 patentably distinguishes over the prior art of record by reciting,

“A probe sheet unit being a sensing section of a semiconductor wafer measuring instrument comprising: a base plate mountable to a prober of the instrument; a sheet member mounted to the base plate; and plural measurement probes provided on one surface of the sheet member, wherein the plural measurement probes are elastically deformable respectively in response to a force acting on the top thereof for varying proximity from the top of the probe to said sheet member and said sheet member is elastically deformable in response to a force acting thereon through the respective measurement probes for varying proximity therefrom to said base plate, wherein a proximity to the sheet member is variable in order to absorb and accommodate a plurality of dispersion in heights of electrodes of a measurement objective so as to accommodate inclination and warp of the measurement objective as a whole.” (Emphasis Added)

Therefore, withdrawal of the rejection of claims 1-3 and 7 under 35 U.S.C. §103(a) as being unpatentable over Kanamaru et al. (US 6,496,023) in view of Howland (US Publication No. 2003/0227292) is respectfully requested.

Claim 4 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Kanamaru et al. '023) in view of Howland ('292) as applied to claims 1-3 above, and further in view of Takayama et al. (US 5,977,73).

Takayama et al. describes a probe structure containing a contact part (2) formed on one side (1a) of an insulating substrate (1). An intermediate layer (2b) is provided with a hardness set to 10-300 Hk.

Claim 4 is allowable by virtue of its dependence upon an allowable independent claim.

Therefore, withdrawal of the rejection of claim 4 under 35 U.S.C. §103(a) as being unpatentable over Kanamaru et al. ('023) in view of Howland ('292), and further in view of Takayama et al. (US 5,977,73) is respectfully requested.

Claims 5 and 7 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Kanamaru et al. ('023) in view of Jitsumori et al. (US 6,232,791).

Jitsumori et al. describes a testing board having probe terminals (14) which expand laterally after extending through an elastic sheet (13).

Claims 5 and 7 are allowable by virtue of their dependence upon an allowable independent claim. Therefore, withdrawal of the rejection of claims 5 and 7 under 35 U.S.C. §103(a) as being unpatentable over Kanamaru et al. ('023) in view of Jitsumori et al. (US 6,232,791) is respectfully requested.

Claim 6 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Kanamaru et al. ('023) in view of Wada et al. (US Publication No. 2004/172556).

Wada et al. describes elastomer (29) being made of a softer material. The Examiner asserts that this feature inherently meets the limitation that "the sheet member is made of a material with a linear expansion coefficient in the range of from 2.5 to 10.5 ppm/_C".

Claim 6 is allowable by virtue of its dependence upon an allowable independent claim. Therefore, withdrawal of the rejection of claim 6 under 35 U.S.C. §103(a) as being unpatentable over

Kanamaru et al. ('023) in view of Wada et al. (US Publication No. 2004/172556) is respectfully requested.

Conclusion

In view of the aforementioned amendments and accompanying remarks, claims, as amended, are in condition for allowance, which action, at an early date, is requested.

If, for any reason, it is felt that this application is not now in condition for allowance, the Examiner is requested to contact the applicants' undersigned attorney at the telephone number indicated below to arrange for an interview to expedite the disposition of this case.

In the event that this paper is not timely filed, the applicants respectfully petition for an appropriate extension of time. Please charge any fees for such an extension of time and any other fees which may be due with respect to this paper, to Deposit Account No. 01-2340.

Respectfully submitted,
ARMSTRONG, KRATZ, QUINTOS,
HANSON & BROOKS, LLP



George N. Stevens
Attorney for Applicant
Reg. No. 36,938

GNS/nrp
Atty. Docket No. **040184**
Suite 1000
1725 K Street, N.W.
Washington, D.C. 20006
(202) 659-2930



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